Whirlpool Europe
Customer Services

Whirlpool

Service Manual

Tumble dryer
Air Vent Electronic
AWZ 3413

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	Family	ALPHA

RoHS

This documentation is only intended for qualified technicians who are aware of the respective safety regulations.

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Subject to modification

Technical data

Dimensions

Height	85	cm
Width	59.5	cm
Depth	56	cm

Weight

Gross weight	33	kg
Net weight	31	kg

Surroundings temperature

Room temperature maximun	35	˚C
Room temperature minimum	5	˚C

Humidity

Relative humidity maximun	95	%

Power connection

Voltage	220 - 240	V
Frequency	50	Hz
Connected load	2.3	kW
Fuse	10	A

Drum data

Volume	112	l
Drum speed	56 ± 3	rpm
Airflow	120 - 160	m^3 /h

Capacity of laundry

Cotton max.	6	kg
Easy care max.	2.5	kg

Exhaust hose

Inner diameter	10	cm
Maximum allowable length (with 2 bows)	4	m

Electrical components

Heating

Type	Aluminium mass heating	
Nominal voltage	230 +10%, -15%	V
Nominal power	2500	W ± 5%
Heating resistances:		
Connection points R20	23.5 - 28	Ω

Thermostats

Caution:

+ **If one of the thermostats (TL, TH1.2) is defective, the whole heating element has to be changed for safety reason !**

+ **Therefore, the thermostats are not available as separate spare parts !**

Safety thermostat (in heater) TL

Switch off (temp.)	298 -10	˚C
Heat resistance of solder	260	˚C

Fluff thermostat (in heater) TH 1.2

Switch off (temp.)	220 ± 7.5	˚C
Hysteresis	12 - 25	K

Exhausting thermostat (in airchannel) TH 1.1

Switch on (temp.)	38 ± 5	˚C
Switch off (temp.)	53 ± 4	˚C

Control module

Type	Alphatronic	
Nominal voltage	230 +10%, -15%	V
Frequency	50/60	Hz

Rated currents

Motor	≤10	A
Heater	≤16	A

Temperature

Ambient	up to 85	˚C
Storage	-25 to 85	˚C

Technical data

Main- and blower motor

Type	1-phase asynchronous	
Nominal voltage	230 +10%, -15%	V
Frequency	50	Hz
Power consumption	295	W ± 7%
Resistances of coils:		
Main coil (2 - 3)	24.7	Ω ± 7%
Auxiliary coil (2 - 1)	25.6	Ω ± 7%
Rated speed with 5 kg laundry and 100% rest humidity	2730	rpm
Capacitor	10	µ F ± 7%

Radio interference filter

Typ	ISKRA KPB 7325	
Voltage max.	275	V
Capacity	100 nF X1 + 2 x 15 nF Y2 + 1MΩ	

Buzzer

Integrated on the electronic display.

Display

No. of LEDs	7
Program selector	11 positions integrated ON/OFF

Efficiency Class

Energy class	C

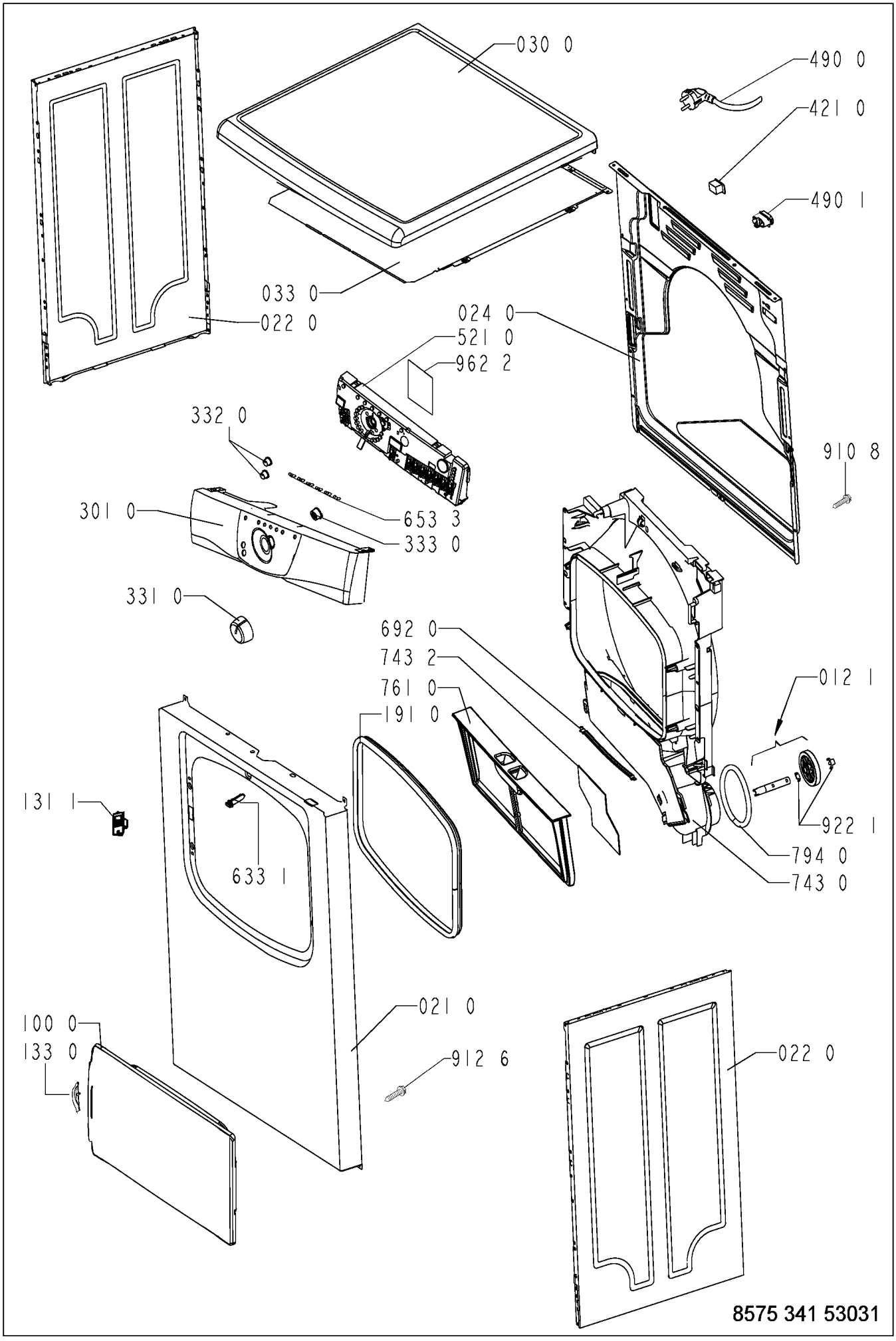
Spare part list

Model **AWZ 3413**
Service No. **857534153032**
Version **857534153032**

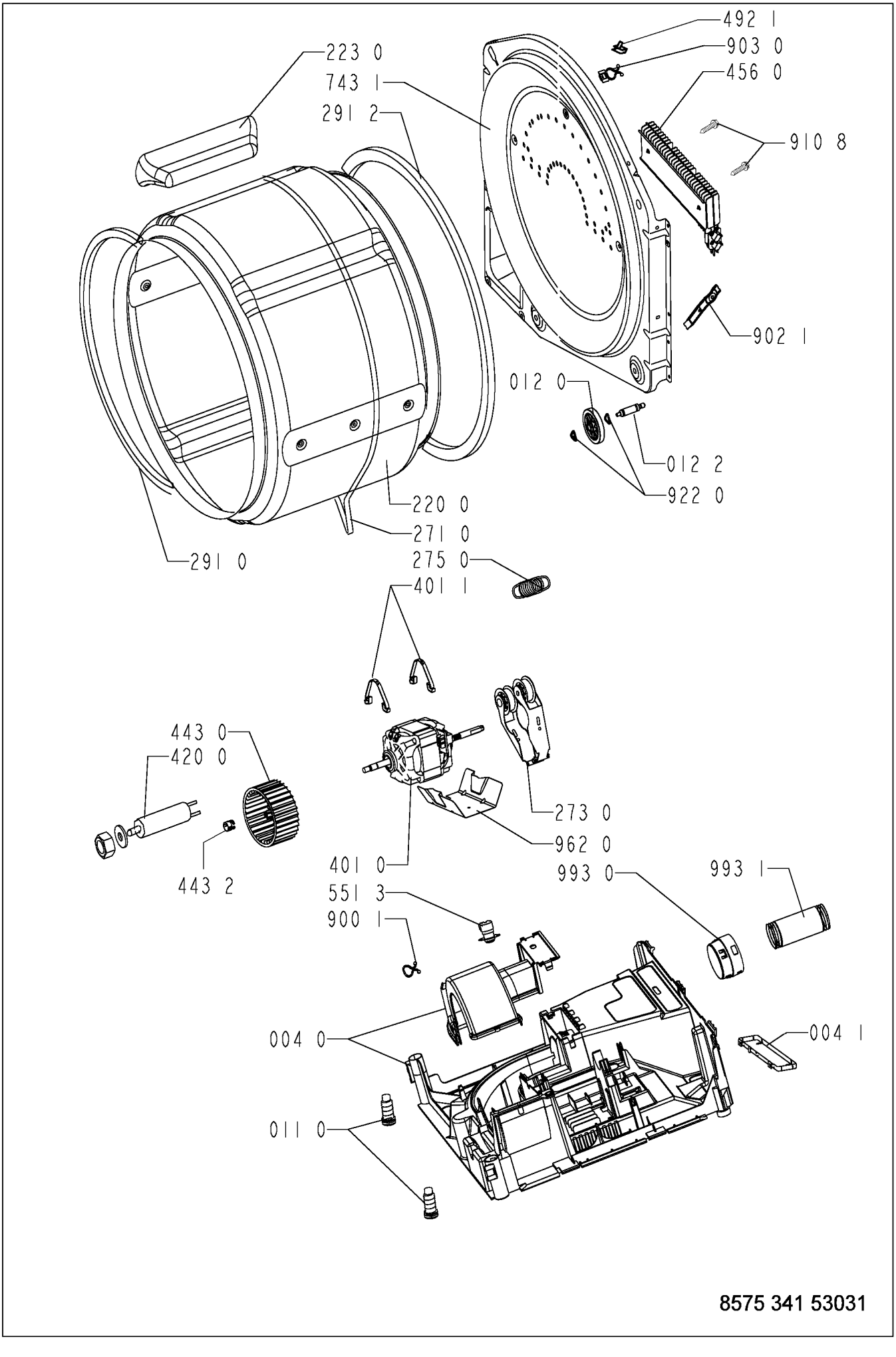
Pos. No.	12NC Code	Description
004 0	**4812 440 10615**	Bottom RO
004 1	**4812 466 38101**	Protec,el.parts /bottom AV
011 0	**4812 500 18054**	Foot adjustable
012 0	**4812 528 78033**	Roll
012 1	**4812 528 98003**	Shaft Front + Roll
012 2	**4812 520 28188**	Shaft rear
021 0	**4812 440 10867**	Front panel RO GW
022 0	**4812 440 10821**	Panel side GW
024 0	**4812 440 11475**	Panel rear AV
030 0	**4812 440 11189**	Table top R0 WH EBL
033 0	**4812 310 18582**	Kit Push in cover
100 0	**4812 440 11134**	Door R0 EBL WH
131 1	**4812 271 38462**	Door lock RO GW
133 0	**4812 498 18359**	Handle door /pin R0 WH EBL
191 0	**4812 466 68539**	Gasket door
220 0	**4812 418 18177**	Drum cpl. SS
223 0	**4812 418 89017**	Drum lifter GW
271 0	**4812 358 18186**	Belt 1965 H6 EH80
273 0	**4812 358 18055**	Pulley jokey
275 0	**4812 492 68129**	Spring
291 0	**4812 466 68563**	Gasket Drum front
291 2	**4812 466 68837**	Gasket drum rear
301 0	**4812 452 15064**	Control panel AWZ 3413
331 0	**4812 412 59071**	Knob timer EBL
332 0	**4812 410 29252**	Button Opt. EBL white
333 0	**4812 513 18151**	Button Start EBL
401 0	**4812 361 18533**	Motor + fan wheel + clamp, AV
401 1	**4812 401 18421**	Clamp Motor
420 0	**4812 121 18144**	Capacitor 10 µ F
421 0	**4812 121 18276**	Interf.filter
443 0	**4812 361 18537**	Blower wheel
443 2	**4812 290 88096**	Clamp blower wheel, stainless
456 0	**4812 259 28675**	Heating element 2050W
490 0	**4812 310 18404**	Kit cable, mains 5m 3x1,5
490 1	**4812 321 28433**	Strain relief + protect.
492 1	**4812 401 18195**	Clip
521 0	**4812 214 79303**	Control board WH AV ALPHA
551 3	**4812 282 08651**	Thermostat 1/2"
633 1	**4812 276 18422**	Pin Start reset GW
653 3	**4812 134 48324**	Light guide ALPHA WH
692 0	**4812 278 58001**	Sensor
743 0	**4812 530 48631**	Air guide RO GW
743 1	**4812 530 18011**	Heating chamber
743 2	**4812 466 68538**	Seal for blower
761 0	**4812 480 58323**	Filter RO GW
794 0	**4812 466 28107**	Gasket
900 1	**4812 290 88053**	Clip
902 1	**4812 256 38002**	Bracket Roller
903 0	**4812 532 28028**	Clip fix
910 8	**4812 502 48348**	Screw ST 4,2x11
912 6	**4812 502 48353**	Screw 4X20
922 0	**4812 532 58005**	Ring circlip Triring
922 1	**4812 532 58007**	Ring circlip
962 0	**4812 466 38012**	Protector Motor
962 2	**4812 466 38056**	Foil Aluminium Display board

Pos. No.	12NC Code	Description
993 0	**4812 263 78014**	Adapter
993 1	**4812 310 18413**	Accessory hose kit AMH 577

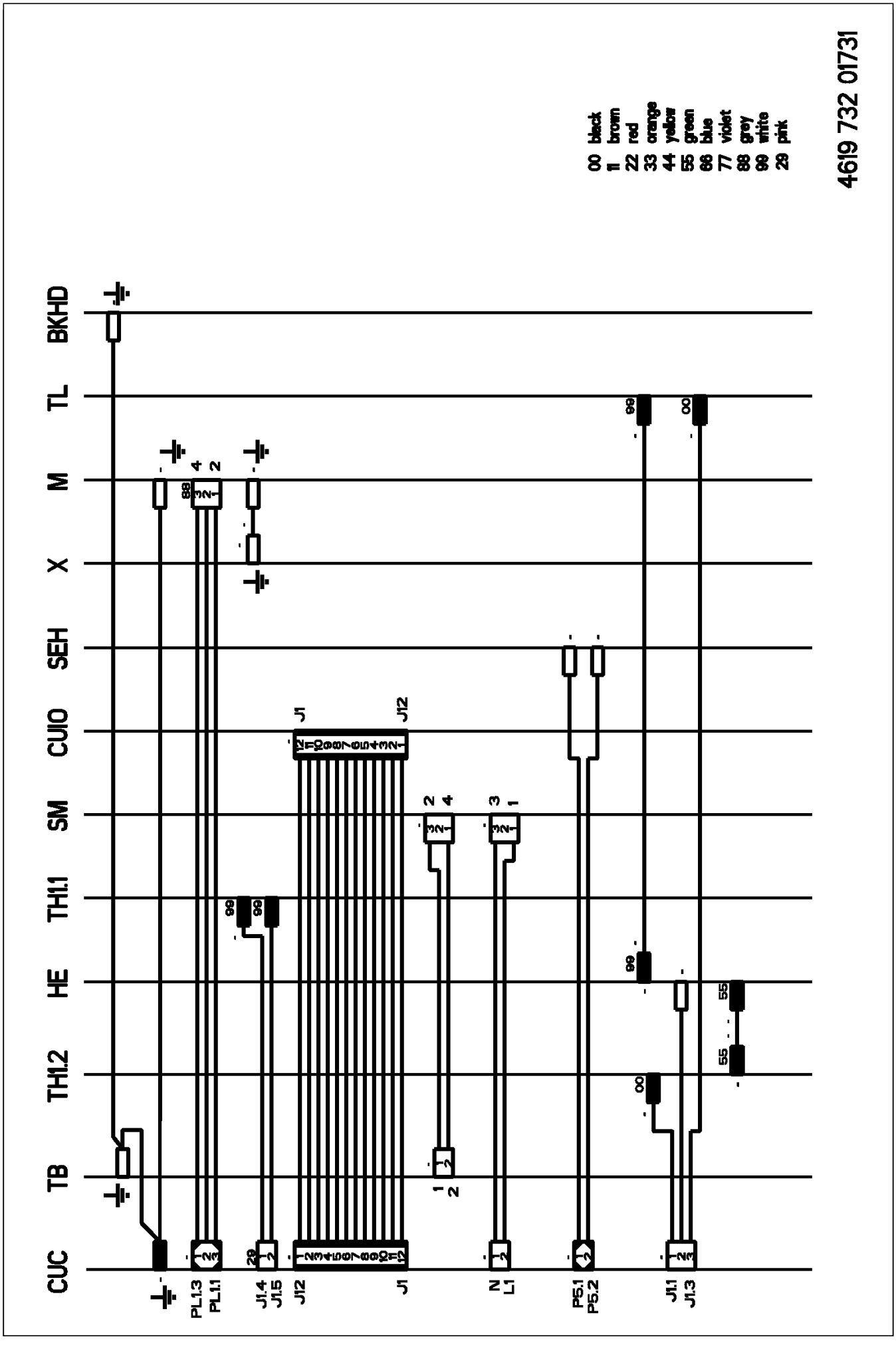
Exploded view



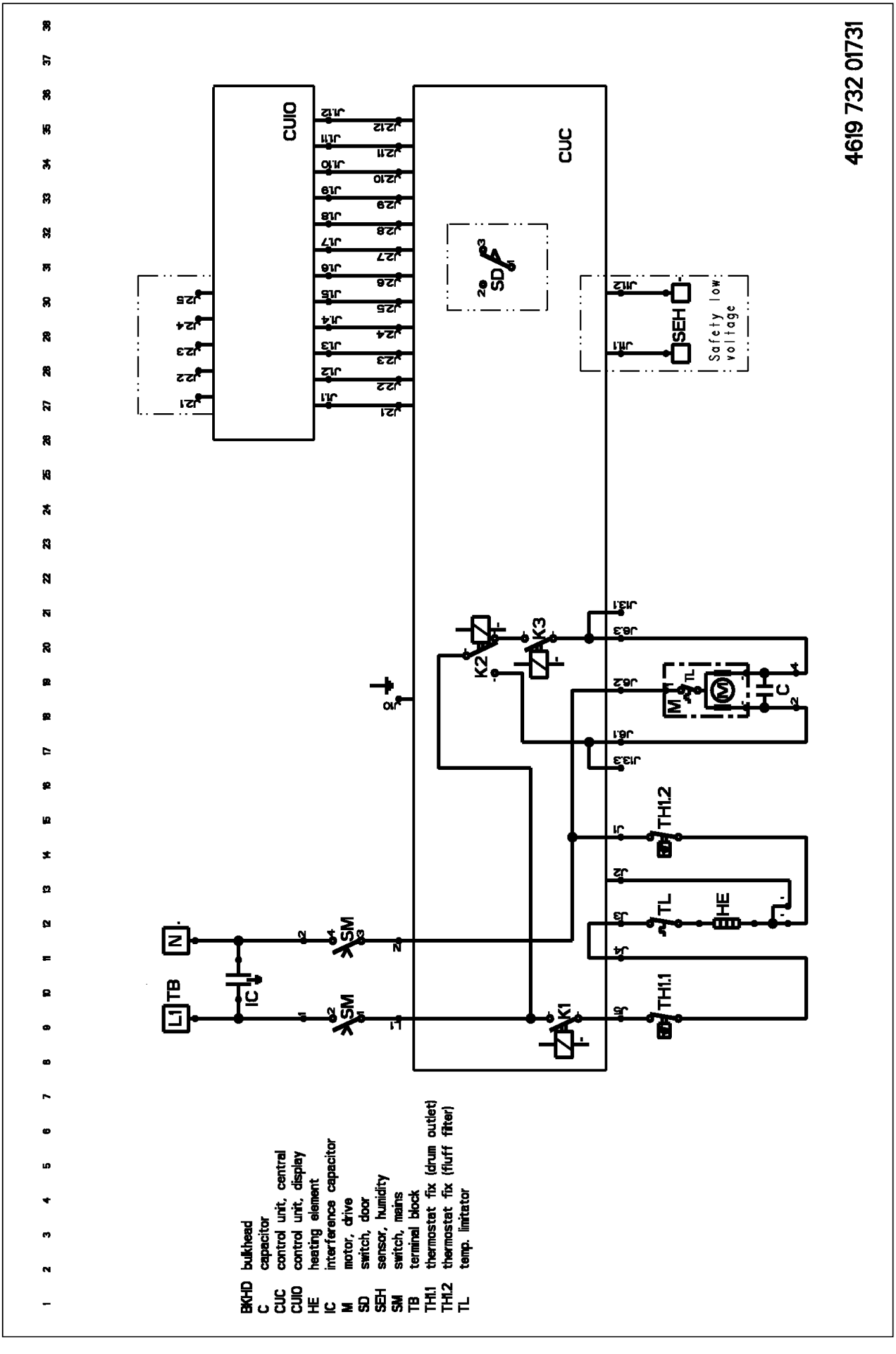
Exploded view



Wiring diagram



Circuit diagram



Text/Legend

Program Flow for WH AV (Airvented)

Program Phase	Options influencing program phase	Motor movement	Heating Cycles: Cotton	Heating Cycles: Easy Care	Heating Cycles: Time Drying (Jet)	Heating Cycles: Airing	Humidity measurement	Duration	Conditions to go in the next phase
Programming (Selection)	-	off	off	off	off	off	off	-	push start button AND door closed
Drying I	Gentle	rev	100%	100%	75%		on	RH=HT1 or t_1	WH AV HT 1 **OR** duration
	Normal	rev	100%	100%	100%	⇓	on	RH=HT1 or t_1	
Drying II	Gentle	rev	90%	90%	⇓	-	on	RH=HT2 or timeout	WH AV HT 2 **OR** timeout
	Normal	rev	100%	100%	90%	⇓	on	RH=HT2 or timeout	
Drying III	Gentle	rev	75%	75%	⇓	-	on	RH=HT3 or timeout	WH AV HT 3 **OR** timeout
	Normal	rev	90%	90%	⇓	⇓	on	RH=HT3 or timeout	
Drying IV	Gentle	rev	75%	75%	⇓	-	on	RH=target or timeout	selected humidity **OR** timeout
	Normal	rev	75%	75%	⇓	⇓	on	RH=target or timeout	
Cool Down	-	rev	off	off	off	off	off	t_{cd}	duration
Anticrease	-	rev-ac	off	off	off	off	off	t_{ac}	duration
Drying End	-	off	off	off	off	off	off		

Humidity Targets	
HT1	RH=22 %
HT2	RH=22 %
HT3	RH=15 %
selected humidity	RH= selected program target

Reversing type	off (sec)	cw (sec)	off (sec)	ccw (sec)
rev	2	80	2	6
rev-ac	2	80	2	6

Duration	
t_1	60 min Cotton / 20 min Easy Care
timeout	60 min
t_{cd}	6 min
t_{ac}	60 min

Heater cycles	Heater on	Heater off
100%	180 sec	0 sec
90%	162 sec	18 sec
75%	136 sec	44 sec

Text/Legend

Program flow WH CD WCT and WH CD WCB (Condenser)

			Heating Cycles						
Program Phase	Options influencing program phase	Motor movement	Cotton	Easy Care	Time Drying Jet)	Airing	Humidity measurement	Duration	Conditions to go in the next phase
Programming (Selection)	-	off	off	off	off	off	off	-	push start button AND door closed
Drying I	Gentle	rev	100%	100%	78%		on	RH=HT1 or t_1	WH CD HT 1 **OR** duration
	Normal	rev	100%	100%	100%	⇓	on	RH=HT1 or t_1	
Drying II	Gentle	rev	90%	90%	⇓	-	on	RH=HT2 or timeout	WH CD HT 2 **OR** timeout
	Normal	rev	100%	100%	90%	⇓	on	RH=HT2 or timeout	
Drying III	Gentle	rev	78%	78%	⇓	-	on	RH=HT3 or timeout	WH CD HT 3 **OR** timeout
	Normal	rev	90%	83%	⇓	⇓	on	RH=HT3 or timeout	
Drying IV	Gentle	rev	67%	67%	⇓	-	on	RH=target or timeout	selected humidity **OR** timeout
	Normal	rev	78%	67%	⇓	⇓	on	RH=target or timeout	
Cool Down	-	rev	off	off	off	off	off	t_{cd}	duration
Anticrease	-	rev-ac	off	off	off	off	off	t_{ac}	duration
Drying End	-	off	off	off	off	off	off		

WH = Whirlpool, CD = Condense Dryer, WCT = Water Container Top,
WCB = Water Container Bottom

Humidity Targets	
HT1	RH=22 %
HT2	RH=22 %
HT3	RH=15 %
selected humidity	RH= selected program target

Reversing type	**off (sec)**	**cw (sec)**	**off (sec)**	**ccw (sec)**
rev	2	80	2	6
rev-ac	2	80	2	6

Duration	
t_1	60 min Cotton / 20 min Easy Care
timeout	60 min
t_{cd}	12 min, 9min for 20min jet program
t_{ac}	60 min

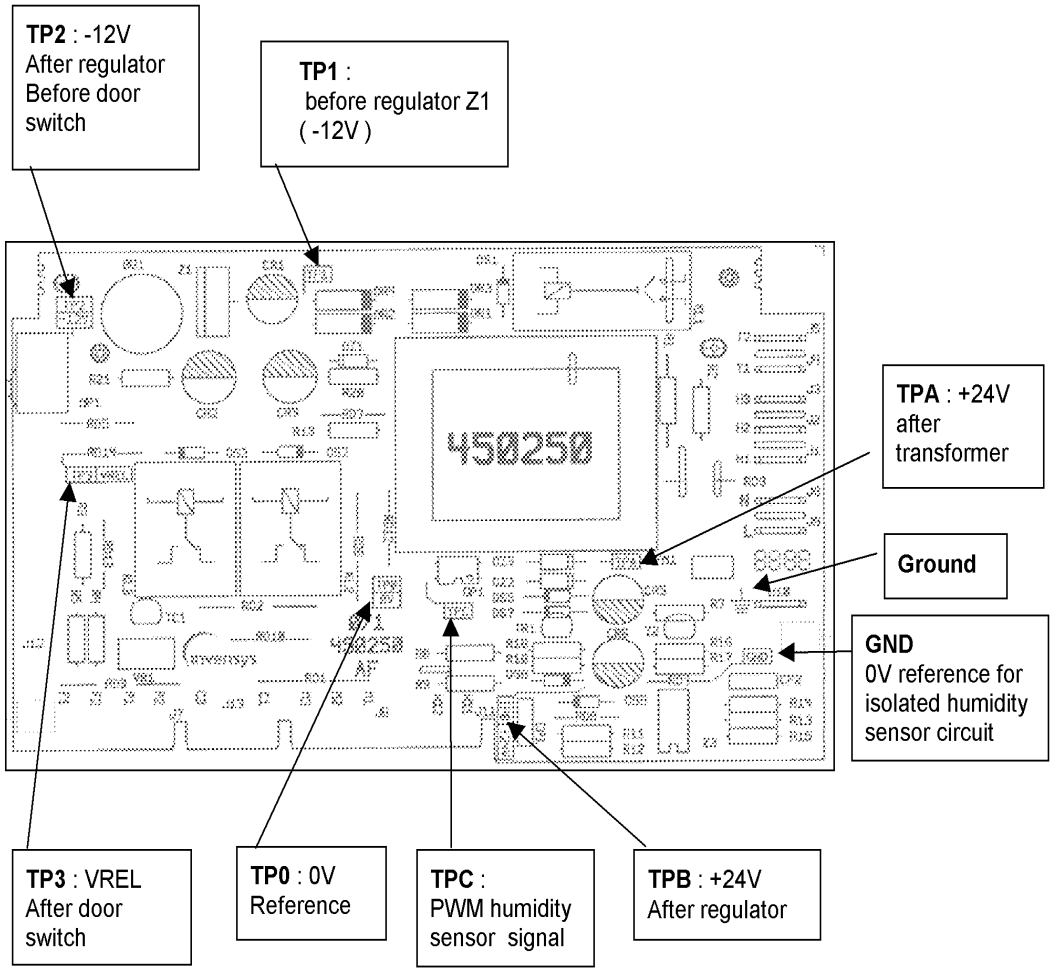
Heater cycles	**Heater on**	**Heater off**
100%	180 sec	0 sec
90%	162 sec	18 sec
83%	150 sec	30 sec
78%	140 sec	40 sec
67%	121 sec	59 sec

Text/Legend

Testpoints at power board

Alphatronic WH

WH AV (AIR VENTED), WH CD WCT and WH CD WCB (CONDENSER)



TP0: reference for –12V circuit (RD6)
TP1: -12V after transformer, unregulated (DR4)
TP2: -12V regulated (MP1)
TP3: -12V regulated if door closed (RD14)
-1,1V if door opened

GND: reference for class II isolated humidity sensor circuit (RD4)
TPA: +24V after transformer, unregulated (DZ3)
TPB: +24V regulated (DS8)
TPC: PWM signal of humidity sensor (OP1)

WH = Whirlpool, CD = Condense Dryer, AV = Airvented,
WCT = Water Container Top, WCB = Water Container Bottom

Text/Legend

Test programs

The TEST MODE delivers the possibility to check several functions of the dryer independently of the normal drying programs.

Entering the Test Mode

a) Close door of the dryer or block door switch
b) Rotate program selector to position **„Airing“**
c) Press and release option button „Gentle“ three times within 6 sec. (If accidently the button is pushed more than three times, this will have no negative impact. The test mode will start in step1 anyway)

If the sequence a) - c) is correct: =>Test Mode basic signal is displayed (see Test mode display)and Step1 of test program is executed.

Advance to next step

Push OPT2: "Buzzer"

Leaving the Test Mode

The TEST MODE is terminated by:

- Push Start Button
  OR
- Interrupt of the mains supply for a time of 40 sec.

  OR
- Open door
  OR
- Turn rotary selector
  OR
- Last step of test program is reached and button OPT2 is pushed once more

Test mode display

When test mode is entered:

LED group:	**Behaviour:**
Program sequence LEDs (PS2...PS5)	Indication of test step acc. table ‚indication'
Buzzer	Beeps when button OPT1 (‚Gentle') is pushed

Text/Legend

Indication

Indicator	Test Program Step								
	Step1>>	Step2>>	Step3>>	Step4>>	Step5>>	Step6>>	Step7>>	Step8>>	Step9
LED PS2 (Overdry Protection)	ON	OFF	OFF	OFF	ON	ON	ON	ON	ON
LED PS3 (Drying)	ON	ON	OFF	OFF	ON	OFF	OFF	ON	ON
LED PS4 (End)	ON	OFF	ON	OFF	OFF	ON	OFF	ON	OFF
LED PS5 (Anticrease)	ON	OFF	OFF	ON	OFF	OFF	ON	OFF	ON

After sales service test program

The test program works sequentially, that means the change from one program step to the next has to be done only by request of pushing the OPT2 button!

Test Program Step No.	Test/Tested Component	Description	
			Test Mode is entered
Step 1**	Factory Test Program 1	Motor ON, short reversing rev-x Heating Element ON, cycle heat-x Display and Button Test: ON Humidity Input Test/float: ON	Push OPT2 button
Step 2**	Factory Test Program 2	Motor ON, long reversing rev-y Heating Element: ON, cycle heat-y Display and Button Test**: ON Humidity Input Test/float**: ON	Push OPT2 button
Step 3	Pump & Float Switch	WH CD WCT: 1) Fill in water untill float switch is switched. 2) Container LED is switched ON and pump is switched ON WH CD WCB: 1) Pull out container (switch switches) 2) Container LED is switched ON WH AV: skip this test step manually!	Push OPT2 button
Step 4	Motor CCW	Motor: ON, ccw Heating Element: OFF	Push OPT2 button
Step 5	Motor CW	Motor: ON, cw Heating Element: OFF	Push OPT2 button
Step 6	Heating Element Full Power	Heating Element ON, 100% Motor: ON, cw	Push OPT2 button
Step 7	Heating Element Reduced Power	Heating Element ON, 78% Motor: ON, cw	Push OPT2 button
Step 8**	Humidity Input	Description see below	Push OPT2 button
Step 9	Display last failure/error code	Last error/failure code is displayed	Push OPT2 button
EXIT	Leave Test Mode	Go to Programming phase (Selection)	

**Description see below

Text/Legend

Heating and Reversing Cycle for Factory Test Program 1 (Step1) :

Dryer Type	Heating Element heat-x		Motor rev-x			
	Heater ON	Heater OFF	CW ON	OFF	CCW ON	OFF
Condenser	12 sec	0 sec	4 sec	2 sec	4 sec	2 sec
Airvented	11 sec	0 sec	3 sec	2 sec	4 sec	2 sec

Heating and Reversing Cycle for Factory Test Program 2 (Step2):

Dryer Type	Heating Element heat-y		Motor rev-y			
	Heater ON	Heater OFF	CW ON	OFF	CCW ON	OFF
Condenser	26 sec	0 sec	10 sec	3 sec	10 sec	3 sec
Airvented	21 sec	0 sec	10 sec	3 sec	5 sec	3 sec

Humidity Measurement Test

Max. Duration: no limit
Description:
- Test is active during Steps 1+2 and Step8
- Resistors have to be connected at the humidity sensor
- Door must be closed or door switch blocked (otherwise 24V power supply off)
- LEDs indicates measured humidity level due to following table:

Resistances	LED OPT1 ("Gentle")	LED Failure 2 ("Fluff Filter")
250 kOhm	ON	OFF
1130 kOhm	ON	ON
3700 kOhm	OFF	ON
open circuit	OFF	OFF

Display and Button test

Description:
- Test is active during all test steps.
- If option buttons are pushed LEDs are switched on and off. (exception: OPT1 button ‚Gentle', this button is used for humidity measurement)